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ABSTRACT

This booklet is intended to help mainstreamed mentally retarded, emotionally disturbed, or learning disabled high school students acquire a basic understanding of the responsibilities and working conditions of nurse aides/assistants and to practice basic math skills necessary in the occupation. The first section provides a brief introduction to the occupation by focusing upon those job tasks of a nurse aide/assistant with which the student is likely to be familiar. The next two sections deal with the work environment of the typical nurse aide/assistant and the training, education, and experience needed for the occupation. Exercises addressing basic math skills used by nurse aides/assistants are provided. Various suggestions are listed for students interested in further exploring the occupation of nurse aide/assistant. A glossary and answer sheet conclude the booklet. (YLB)

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MATH on the job

Nurse Aide/Assistant

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MATH ON THE JOB:

NURSE AIDE/ASSISTANT

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MATH on the job

Nurse Aide/Assistant

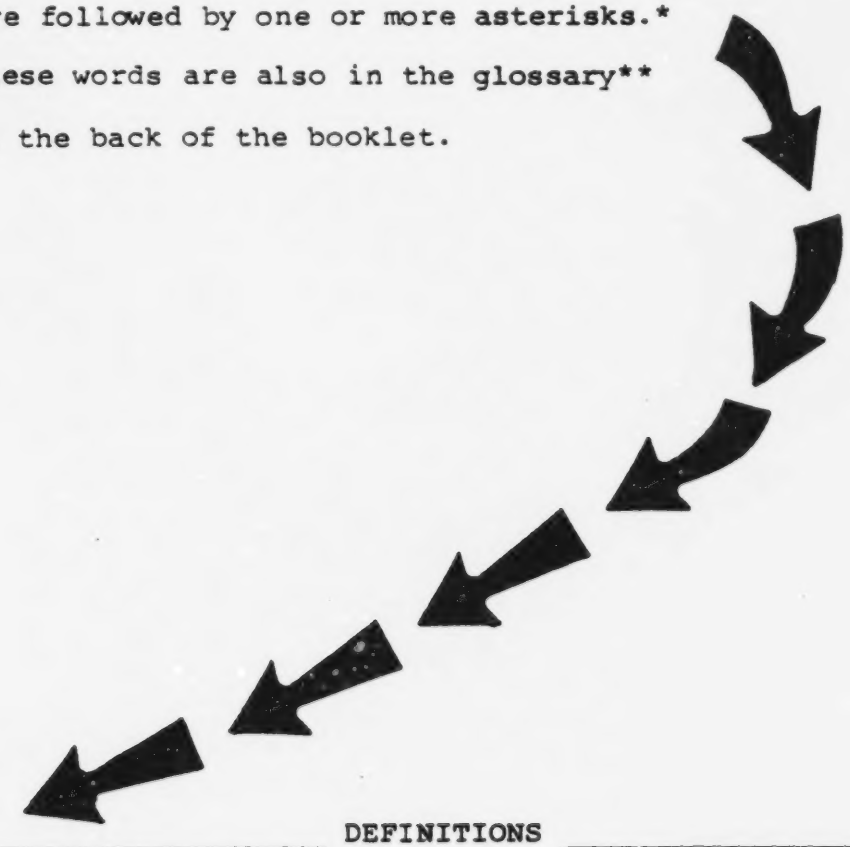
In this booklet, you can--

- find out what a nurse aide or assistant does
- see how a nurse aide or assistant uses math
- get a chance to use math as a nurse aide or assistant
- find out the types of things a nurse aide or assistant needs to know
- find out what courses, training, and experience you need to become a nurse aide or assistant

SPECIAL WORDS USED IN THIS BOOKLET

Workers in many jobs use special words or special meanings for words. Learning these words helps you to learn about a job.

You will find some of these special words in this booklet. When these words, and some hard words, are used for the first time, they are followed by one or more **asterisks.*** These words are also in the **glossary**** at the back of the booklet.



DEFINITIONS

*An asterisk (*) is a symbol that tells you to look at the bottom of the page for the meaning, or definition, of the word.

**A glossary is a list of words with their meanings.

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HAVE YOU EVER...

- visited a hospital or nursing home?
- changed your bed linens (sheet and pillow cases)?
- helped a sick person feel comfortable?
- taken your temperature*?

If you have, then you have some idea about the work of a nurse aide or assistant. This booklet will help you learn about the work of a nurse aide or assistant and how math is important to do the job.

DEFINITION

*Temperature is how hot the body of a living being is. Temperature is measured in degrees by using a body thermometer.

WHAT DOES A NURSE AIDE OR ASSISTANT DO?

A nurse aide or assistant helps nurses take care of patients. As a nurse aide or assistant, you--

- take and record patients' vital signs. Vital signs are such things as body temperature, pulse rate*, and respiration rate**
- measure and record food and liquid intake*** and output****
- help patients get ready for doctors' examinations
- lift and move patients into and from their beds
- take patients in wheelchairs to other rooms for treatment or for x-rays
- adjust patients' beds to desired positions
- serve food trays and remove them when patients have finished eating
- help patients by providing them with clean bed pans
- change the linens on patients' beds
- bathe patients or prepare them for a bath or shower
- clean and dust patients' rooms

DEFINITIONS

*Pulse rate is the speed the heart is pumping blood. Pulse rate is measured by counting the regular beats in the artery at your wrist.

**Respiration rate is the speed of breathing. One respiration is when a person breathes in once and breathes out once.

***Intake is the amount of liquid and solid food a patient swallows in a certain period of time.

****Output is the amount of waste coming out of the body over a certain period of time.

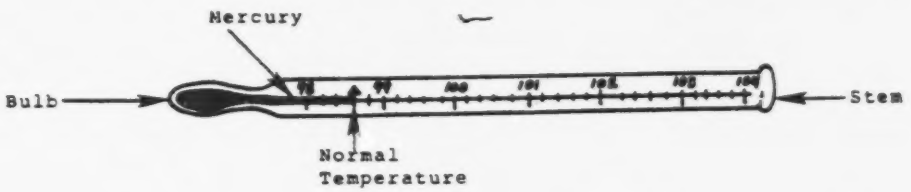
Nurse aides or assistants use math on the job every day. As a nurse aide or assistant, you--

- count, add, subtract, multiply, and divide
- use whole numbers, decimals, and fractions
- use special measuring cups called graduates
- use thermometers and timers
- measure liquids, time, and temperature
- compare numbers

A nurse aide uses math to read thermometers and determine patients' temperatures.

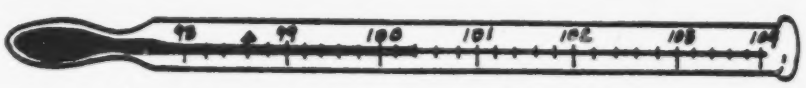
EXAMPLE

The normal body temperature is 98.6°*. If a patient's temperature is more than 98.6°, it is an indication that the person is ill. If a patient's temperature is over 101°, the nurse aide informs the nurse because a high temperature can be dangerous. Look at the picture of a thermometer below.



To read a thermometer look at the scale on the thermometer. Each long line stands for 1 degree. There are four short lines between each of the long lines. Each short line stands for two tenths (.2) of a degree. Between the long lines of 98° and 99°, there is a line with an arrow beneath it. This marks the measure for a normal body temperature (98.6°). Look at the last long line within the column of mercury, for example, 98, 99, 100. Look for the last short line that is within the column of mercury, for example, .2, .4, .6, or .8.

What is the temperature reading on the thermometer below?



You are right if you said 100.4°.

DEFINITION

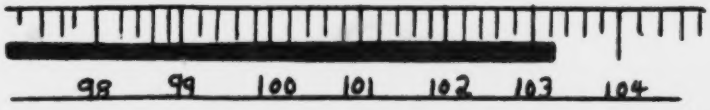
***° is a mark that means degree. Degrees are used to measure how hot or cold something is.**

NOW YOU TRY IT

Practice Exercise A

The figures below show part of a thermometer. The heavy dark line represents the mercury. What is the temperature reading on each thermometer?

1.



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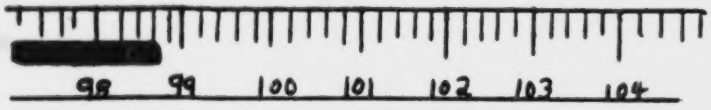

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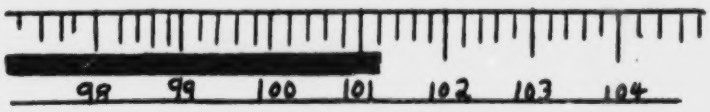


A nurse aide uses math to measure and record liquid intake and output.

EXAMPLE

Sometimes, it is important for the doctor to know how much liquid a patient drank. This is called liquid intake. The doctor also needs to know the patient's liquid output. Let's say that you gave a patient 12 ounces of milk for lunch. When the patient's tray was returned, there were 4 ounces of milk in the glass. How much milk did the patient drink?

Find the amount by subtracting the remaining liquid from the full amount:

12 ounces - 4 ounces = 8 ounces

The patient drank 8 ounces of milk.

NOW YOU TRY IT

Practice Exercise B

5. At dinnertime, you gave a patient 10 ounces of milk. When the patient's tray was returned, 3 ounces of milk were left in the glass. How much milk did the patient drink?

6. At breakfast, you gave a patient 8 ounces of orange juice and 10 ounces of milk. When the patient's tray was returned, there were 2 ounces of orange juice and 2 ounces of milk left. How much liquid did the patient drink?

7. George Stevens drank the following liquids during the day:

7-3 shift	8 oz. of milk
	6 oz. of orange juice
	12 oz. of water
3-11 shift	14 oz. of soda
	8 oz. of water
	6 oz. of milk
11-7 shift	6 oz. of water

What was George Steven's liquid intake for the day?

A nurse aide uses math to take a patient's pulse.

EXAMPLE

The pulse rate shows how fast the heart is beating. The rate varies according to the age of the person. Normal pulse rates vary from 140 beats per minute in newborn babies to 60 beats per minute for older adults.

Nurse aides measure a patient's pulse at the wrist. After they find the pulse, they notice if the beat is steady or irregular. If the patient's pulse has an irregular beat, the nurse counts the pulse beats for 1 minute.

If the pulse beat is regular, the nurse aide may count for only 30 seconds. Then, the nurse aide multiplies the number counted by 2. The result is the patient's pulse rate.

If the pulse rate is under 60 or over 100, the nurse aide reports the pulse rate to the nurse.

Say that you took Mary Hawkins' pulse rate and the beat was regular. You counted 38 beats for 30 seconds. What was her pulse rate?

$$38 \times 2 = 76$$

Mary's pulse rate was 76 beats per minute.

NOW YOU TRY IT

Practice Exercise C

Find the pulse rate for each patient in questions 8-15.

	Patient's Room Number	30-Second Pulse Rate Reading	Pulse Rate Per Minute
8.	201	42	?
9.	202	36	?
10.	203	35	?
11.	204	41	?
12.	205	38	?
13.	206	56	?
14.	207	29	?
15.	208	47	?

A nurse aide or assistant uses math to figure out a patient's weight.

EXAMPLE

For some patients, especially children, it is very important to keep track of their weight. Let's assume that you are a nurse aide at a children's hospital. At the time of birth, a baby boy weighs 3 pounds, 10 ounces. Your supervisor asks you to weigh the baby. When you weigh the baby, you find that the baby weighs 3 pounds, 8 ounces. How much weight did the baby gain or lose? To find out, subtract the smaller amount from the larger amount.

$$\begin{array}{r} 3 \text{ pounds, } 10 \text{ ounces} \\ \underline{3 \text{ pounds, } \ 8 \text{ ounces}} \\ 2 \text{ ounces} \end{array}$$

Since the baby weighed more at birth than now, the baby lost 2 ounces.

NOW YOU TRY IT

Practice Exercise D

In problems 16-20, how much weight did the babies gain or lose? Remember, there are 16 ounces in a pound.

	Weight at Birth	Current Weight	Weight Gain or Loss
16.	9 pounds, 12 ounces	9 pounds, 6 ounces	?
17.	5 pounds, 2 ounces	5 pounds, 14 ounces	?
18.	6 pounds, 5 ounces	6 pounds, 1 ounce	?
19.	8 pounds, 4 ounces	7 pounds, 10 ounces	?
20.	7 pounds, 3 ounces	8 pounds, 1 ounce	?

WHERE DOES A NURSE AIDE OR ASSISTANT WORK?

As a nurse aide or assistant, you may work in any of several types of health care facilities or institutions. You may work in a--

- hospital
- nursing home
- rehabilitation center
- clinic

A nurse aide works with nurses and other health care workers to provide good care to the patients. Your supervisor--

- gives you instructions
- makes sure that you understand the instructions and that you follow them carefully
- checks the records you make
- solves any problems you may have

You also work with patients to help them get better or to stay healthy. The types of patients you help will depend on where you work. You may work with--

- babies
- new mothers
- people with broken bones
- people sick with a disease
- older people
- people recovering from surgery*

DEFINITION

*Surgery is an operation. It usually involves cutting through the skin into the body.

IF YOU ARE INTERESTED IN

THE WORK OF A NURSE AIDE OR ASSISTANT

AND WOULD LIKE TO KNOW MORE,

READ ON

WHAT TRAINING, EDUCATION, AND EXPERIENCE DO YOU NEED TO BECOME A NURSE AIDE OR ASSISTANT?

As a nurse aide, you will get most of your training on the job. However, there are some general things you should know in order to get a job. As a nurse aide, you need to know how to--

- read and write
- listen to directions
- do exactly what you are told
- keep information about patients to yourself
- work well with people by being polite and courteous

A nurse aide or assistant is usually trained after being hired. This may be on-the-job training provided by registered or licensed nurses, plus some classroom instructions.

You may find that some hospitals will ask you to have a high school diploma, although other hospitals will not. You may find it useful to take courses in home nursing and in first aid at public schools and other community agencies. Some technical schools teach classes on how to be a nurse aide or assistant.

Taking every chance to learn new skills and tasks will help you get a better job and a higher salary. Showing that you have math skills will also help you.

Practice Exercise E

The figures below show thermometers. The heavy dark line represents the mercury. What is the temperature reading on each thermometer.

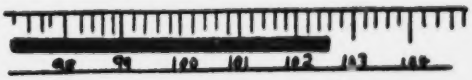
21.

22.

23.

24.

25.



26.

Practice Exercise F

27. At dinnertime, you gave a patient 14 ounces of milk. When the patient's tray was returned, 6 ounces of milk were left in the glass. How much milk did the patient drink?

28. At breakfast, you gave a patient 6 ounces of orange juice and 12 ounces of milk. When the patient's tray was returned, 2 ounces of milk were left. How much liquid did the patient drink?

29. At breakfast, you gave a patient 4 ounces of orange juice and 10 ounces of milk. At lunch time, you gave the patient 16 ounces of milk. The patient drank all the liquids. What was the patient's liquid intake?

30. Your patient drank the following liquids during the day.

7-3 shift	6 oz. orange juice
	10 oz. milk
	16 oz. water
3-11 shift	8 oz. soda
	12 oz. water
11-7 shift	8 oz. milk
	10 oz. water

What was your patient's liquid intake for the day?

Practice Exercise G

31. Your patient's pulse beat is regular. You counted 4 beats for 30 seconds. What is your patient's pulse rate?

32. Your patient's pulse beat is regular. You counted 33 beats for 30 seconds. What is your patient's pulse rate?

33. Your patient's pulse beat is not regular. How long should you count the pulse beats?

You have eleven patients. You took a 30 second pulse rate reading on each as shown below. Find each patient's pulse rate for a full minute.

	Patient's Room Number	30-Second Pulse Rate Reading	Pulse Rate Per Minute
34.	302	27	?
35.	303	42	?
36.	304	51	?
37.	305	31	?
38.	306	63	?
39.	307	32	?
40.	308	36	?
41.	309	44	?
42.	310	30	?
43.	311	48	?
44.	312	53	?
45.	313	45	?

Practice Exercise H

In problems 46-55, how much weight did the babies gain or lose? Remember, there are 16 ounces in a pound.

	Weight at Birth	Current Weight	Weight Gain or Loss
46.	7 pounds, 4 ounces	7 pounds, 1 ounce	?
47.	7 pounds, 6 ounces	7 pounds, 13 ounces	?
48.	4 pounds, 5 ounces	4 pounds, 9 ounces	?
49.	6 pounds	6 pounds, 8 ounces	?
50.	5 pounds, 9 ounces	5 pounds, 2 ounces	?
51.	6 pounds, 8 ounces	7 pounds, 2 ounces	?
52.	7 pounds, 4 ounces	6 pounds, 8 ounces	?
53.	8 pounds, 2 ounces	7 pounds, 6 ounces	?
54.	5 pounds, 15 ounces	6 pounds, 3 ounces	?
55.	8 pounds, 2 ounces	9 pounds, 3 ounces	?

DO YOU WANT TO EXPLORE SOME MORE?

1. Ask family members, friends, and neighbors what they would expect from a nurse aide or assistant in a hospital.

2. Practice taking and recording a friend's temperature, pulse, and respiration rate.

3. Change the sheets and pillow cases on the beds at home.

4. Go to a hospital and watch what the nurse aides or assistants do. Think about what you like about this work and what you do not like.

5. Serve a sick family member food in bed. You may ask if you can practice feeding them.

6. Practice measuring liquids and recording the amounts measured.

7. Practice weighing food on a scale and recording the amounts.

8. Think about the things that you need to know in order to be a nurse aide or assistant. Are you dependable? Can you correctly measure and record liquid amounts? Do you like to help other people?

GLOSSARY

Asterisk (*):	a mark that tells you to look at the bottom of the page for the meaning, or definition, of the word.
° (Degree):	a mark that means degree. Degrees measure how hot or cold something is.
Glossary:	a list of words with their meanings.
Intake:	the amount of liquid and solid food a patient swallows in a certain period of time.
Output:	the amount of waste coming out of the body over a certain period of time.
Pulse rate:	the speed the heart is pumping blood. Pulse rate is measured by counting the regular beats in the artery at your wrist.
Respiration rate:	the speed of breathing. One respiration is when a person breathes in once and breathes out once.
Surgery:	an operation. It usually involves cutting through the skin into the body.
Temperature:	how hot the body of a living being is. Temperature is measured in degrees by using a body thermometer.

ANSWER SHEET

Practice Exercise A

1. 103.2°
2. 98.6°
3. 102.6°
4. 101.2°

Practice Exercise B

5. 7 ounces
6. 14 ounces
7. 60 ounces

Practice Exercise C

8. 84
9. 72
10. 70
11. 82
12. 76
13. 112
14. 58
15. 94

Practice Exercise D

16. lost 6 ounces
17. gained 12 ounces
18. lost 4 ounces
19. lost 10 ounces
20. lost 14 ounces

Practice Exercise E

21. 100.2°
22. 103.4°
23. 101.8°
24. 99.4°
25. 102.6°
26. 99.8°

Practice Exercise F

27. 8 ounces
28. 16 ounces
29. 30 ounces
30. 70 ounces

Practice Exercise G

31. 92
32. 66
33. one minute
34. 54
35. 84
36. 102
37. 62
38. 126
39. 64
40. 72
41. 88
42. 60
43. 96
44. 106
45. 90

Practice Exercise H

46. lost 3 ounces
47. gained 7 ounces
48. gained 4 ounces
49. gained 8 ounces
50. lost 7 ounces
51. gained 10 ounces
52. lost 12 ounces
53. lost 12 ounces
54. gained 4 ounces
55. gained 1 pound, 1 ounce